



Philosophy of Science

PHL 365B

Fulfills department major/minor/elective

Semester/Year: Fall 2024

Meeting Days & Times: MW 11am – 12:18pm

Location: Murphy Center 001

Instructor's Name: Dr. Gregory Nirshberg

Email: gnirshberg@iona.edu

Office Hours: MW 5pm – 6pm (and by appointment)

Office Location: Spellman Hall, 2nd Floor (across from Hynes Institute)

Course Description

A survey of the development of the relations between the philosophical tradition and modern science. Special attention will be given to scientific revolutions in the nineteenth and twentieth centuries and the philosophical schools of thought during this same period. Questions that we will consider include:

- What makes a form of inquiry scientific rather than non-scientific?
- What kind of reasoning justifies belief in the truth of a scientific hypothesis or theory? How do experiments provide evidence for theories?
- Do scientific theories aim to, and can they, tell us about the unobservable world or just about the observable world?
- Is scientific research value neutral? Should it be?
- Do social, cultural or historical factors influence scientific theory choice and acceptance? Should they?

Contact Information

Please email me at the address listed above. I check my email regularly and will do my best to respond within 24 hours (often much quicker than that), but if you don't hear back from me within those 24 hours, email me again as a reminder. If you have a conflict with my office hours, email me and we can set up an appointment for an alternate meeting time. I'm happy to accommodate!

Required Texts/Source Materials

Philosophy of Science: A Very Short Introduction (2nd Edition) by Samir Okasha

Grading Criteria & Assessment Information

Assignments	35%
Online Discussion	20%
In Class Writing	20%
Final Project	25%

The following is a more detailed breakdown of the various requirements which determine your grade for the course.

Assignments

You will have seven small individual writing Assignments throughout the semester, each of which will ask you to demonstrate your competence with, and think critically about, the relevant concepts we've been covering in our course. Each assignment is worth 5% of your semester grade. Individual assignment details will be posted on Blackboard.

Online Discussion

You will have four Online Discussions throughout the semester. Each online discussion is worth a total of 5% of your semester grade. **For these discussion assignments, I will post a short reading and/or prompt on Blackboard.** In one form or another, each of them will ask you to think about a topic we will be discussing in class, *before* we do any formal readings on it, and to post your thoughts. All but one of these assignments will also require two further posts from you. The first will require you to respond to a post from a fellow student. The second will require you to respond to the response on your post from a fellow classmate. Requirements for individual reflections will be found on Blackboard.

IMPORTANT: Check the assignment details early, as *the assignment may have more than one posting window*, with multiple due dates. However, the Blackboard due date will only indicate the FINAL posting window.

In Class Writing (ICW)

You will have 12-15 ICW assignments throughout the semester. These will *not* be announced in advance, and will occur during lecture. ICWs will be *very short* writing assignments asking you to engage with the day's material in some way. Some will be given at the beginning of lecture and may function as a content quiz or will give you the opportunity to formulate a question about the day's reading. Others will be given at the end of lecture and will ask you to reflect on some aspect of our lecture discussion. Some will be given during the lecture and you to think about a question on your own or in groups before we move on to discuss it. I will drop the lowest three grades.

Final Project

The details of this will be posted on Blackboard later in the semester.

Participation

There is no formal grade for participation. However, acquiring a new skill requires practice, and active

participation during class will be an integral part of this process. As you'll quickly see, there's no substitute for talking as much as you can about the difficult questions we'll be considering. **Think of lecture as a free space to try out ideas and clear up confusions. I will never penalize someone for making a mistake in discussion.** If you are on the cusp of a grade at the end of the semester, I will use participation to decide whether a bump is in order.

Final Grades (and final paper grades) will be calculated using the following grading scale

I also will not impose a curve on any individual assignment, or your final grades.

Letter Grade	Grade Point and Grade Scale	Description
A	4.00 93-100	<i>Outstanding.</i> Signifies the highest level of achievement in the subject and indicates an exceptional general competence, and exemplary comprehension and interpretation skills. Work is devoid of errors, and reflects a highly nuanced understanding of disciplinary concepts.
A-	3.67 90-92	<i>Excellent.</i> Signifies an advanced level of achievement approaching the highest category. Work contains a few minor errors, but reflects a mastery of disciplinary concepts.
B+	3.33 87-89	<i>Very Good.</i> Signifies a consistently high level of achievement and indicates that the course requirements have been fulfilled in an intelligent, superior manner. Work contains some minor errors, but reflects a near mastery of disciplinary concepts.
B	3.00 83-86	<i>Good.</i> Signifies a complex engagement with disciplinary content, and well-developed critical skills. Work contains several minor, but no significant errors.
B-	2.67 80-82	<i>Above Average.</i> Signifies a more than acceptable degree of disciplinary knowledge and skills. Work contains some significant and some minor errors.
C+	2.33 77-79	<i>Satisfactory.</i> Signifies consistent achievement of a quality that satisfies, and sometimes exceeds stated, basic requirements. Work contains significant errors and patterns of error, but reflects an acceptable degree of disciplinary knowledge and skills.
C	2.00 73-76	<i>Fair.</i> Signifies achievement of a quality that satisfies the stated, basic requirements of coursework, and a functional, though incomplete understanding of disciplinary concepts.
C-	1.67 70-72	<i>Poor.</i> Signifies a level of understanding below the basic level expected of students. Work contains many errors, including patterns of error, and reflects only partial understanding of disciplinary concepts.
D	1.00 60-69	<i>Minimal Passing.</i> Signifies a level of understanding well below the basic level expected of students. Work is consistently riddled with errors and patterns of error, and reflects only a minimal understanding of disciplinary concepts.
P		<i>Passing.</i> Signifies satisfactory completion of course requirements and the earning of credit without quality points.
U		<i>Unsatisfactory.</i> No quality points assigned.
F	0.00 0-59	<i>Failure.</i> Signifies failure to meet basic course requirements.
FA		<i>Failure - Excessive Absence.</i> Signifies dismissal from a course for unacceptable academic performance and absence from 20 percent or more of the scheduled class sessions. Requests for this grade are filed by the faculty member with the dean of the school in which the student is enrolled. This grade is computed as an "F" in the cumulative index.

Letter Grade	Grade Point and Grade Scale	Description
I		If for serious reasons, students are unable to complete one or more requirements of a course, including the final examination, students may apply for an "Incomplete grade" by filling out the "Incomplete Request" form on Gaels 360. If the instructor grants the request, the instructor will file an "Incomplete grade student plan" with the student and the dean's office within 48 hours of an "incomplete grade" being submitted. The student will have up to 3 weeks from the date that grades are due for a semester to complete all outstanding work unless the instructor specifies an earlier date. Please refer to the Academic Information page in the catalog for complete details.
W		<i>Withdrawal.</i> Signifies withdrawal from a course with permission of the Academic Advising Office or appropriate academic dean.
H		<i>Audit.</i> Signifies that a course was not taken for credit.
SP		<i>Satisfactory Progress.</i> Signifies that a course is not complete as of the end of the present semester, but is continuing.

Instructor's Course Policies & Procedures

Class Etiquette

The use of cell phones is prohibited in class. The use laptops is also prohibited (sorry!), unless you have an accommodation that allows you the use of a laptop (you should come speak to me about this if this is the case). Laptops *can* sometimes be used effectively. But they are also incredibly distracting. In my experience, most students use their laptops in class for everything *but* notetaking, leading to less engagement and poorer performance, and often distracting those sitting around them. However, even for those that use their laptops mostly to take notes, there is strong evidence that notetaking on laptops at best does not help student performance, and at worst actively harms it.

Late Work Policy

Your Online Discussions will receive a 50% penalty for late submission (whether a day late or a month late). In Class Writing assignments *cannot* be made up. I will do my best to grade Final Project submissions that are submitted late, but if I run out of time before grades are due, you will simply earn a 50% on the assignment. If you know in advance that you will not be able to submit an assignment on time, please reach out to asap (i.e., *before* you miss the deadline).

University Policy for all courses and students

[full explanations of policy may be found in the University Catalog]

Cheating and Plagiarism

Cheating and plagiarism subvert both the purpose of the University and the experience students derive from being at Iona. They are offenses which harm the offender and the students who do not cheat. The Iona community, therefore, pledges itself to do all in its power to prevent cheating and plagiarism, and to impose impartial sanctions upon those who harm themselves, their fellow students, and the entire community by academic dishonesty.

Faculty members will report all incidents of cheating and plagiarism to the dean. Every effort will be made to insure justice in any allegation of intellectual dishonesty. Educational assistance rather than adversarial proceedings may be sought. Sanctions may include failure for the assignment, failure for the course, and in the case of a second instance or an egregious violation of ethical and professional standards, dismissal from the University. Students who have been guilty of plagiarism or academic dishonesty at any point in their Iona academic career do not qualify for degrees with honors.

If, in conformity with this policy, a sanction is imposed, students may appeal first, to the professor who discovered the offense; second to the department chair; and third to the academic dean of the division involved. The decision of the academic dean is final. A student has the right to appeal the academic dean's decision to the provost if, and only if, the sanction involves a suspension from class or dismissal from the University. In such appeals, the decision of the provost is final.

[Iona University AI Use Policy \(March 2024\)](#)

Courses at Iona University may allow the use of generative artificial intelligence tools (such as ChatGPT/GPT-4, Gemini etc) at the discretion of the professor. Professors who allow the use of generative AI tools in their courses must state it explicitly in their syllabus and indicate the following: which AI tools students may use; which assignments they may be used for; and how students may use them.

Students may not use generative AI tools towards the completion of any course assignment unless its use is permitted in the course syllabus. Unauthorized uses of generative AI tools will be treated as instances of academic dishonesty. Students who use generative AI in courses where it is permitted are responsible for their submission and should be aware of the following issues with generative AI tools:

- AI generated materials may infringe on materials that have copyright protection and/or are the intellectual property of others.
- Students may not enter any confidential, identifiable, or sensitive materials into an AI tool as this not only violates confidentiality rules but, in some cases, particularly in the Health Sciences, may also violate HIPAA rules.
- Students should be aware that generative AI often provides inaccurate information. Students are expected to check AI output for factual errors and incorrect information.

[Attendance](#)

All students are required to attend all classes. Iona has an attendance policy for which all students are accountable. While class absence may be explained it is never excused. Professors may weigh class absence in the class grade as they see fit. Failure to attend class may result in a failure of the class for attendance (FA), when the student has missed 20% or more of the total class meetings. The FA grade weighs as an F would in the final official transcript.

[e-mail Communication](#)

All students are required to use their assigned Iona email accounts for all University-related business including electronic correspondence between students and faculty. Students are advised to check their Iona email account on a regular basis.

Appeal of Assigned Grade

Students who believe that an error has been made in the assignment of a grade should discuss with the instructor the basis upon which the grade was determined. If, after this review of the grading criteria for the course and the student's performance in it, the student is not satisfied with the assigned grade, an appeal may be made to the department chair. Such appeal must be made in writing, stating the basis upon which the grade is questioned and requesting a departmental review. If, following the review, the student is not satisfied with the departmental decision; final appeal may be made to the academic dean of the department involved. FA excessive absence grades are awarded as a matter of policy and may not be appealed.

Course and Teacher Evaluation (CTE)

Iona University now uses an on-line CTE system. This system is administered by an outside company and all of the data is collected confidentially. No student name or information will be linked to any feedback received by the instructor. The information collected will be compiled in aggregate form by the agency and distributed back to the Iona administration and faculty, with select information made available to students who complete the CTE. Your feedback in this process is an essential part of improving course offerings and instructional effectiveness. We want and value your point of view. You will receive several emails at your Iona email account about how and when the CTE will be administered with instructions on how to proceed.

Iona University Accessibility Statement

Iona University is committed to creating an inclusive and accessible learning environment for all students. If you have been approved for accommodations by the Accessibility Services Office (ASO) and are experiencing any physical or academic barriers based on disability or the way the course is designed, please let me know immediately so that we can discuss appropriate adjustments and/or additional accommodations. If you received accommodations (e.g. extended time for tests) in high school, and would like to receive similar support at Iona, you must first meet with an ASO staff to discuss your needs. Once your accommodations are approved, the Office will provide me with a list of your accommodations. Information about your disability is never shared with your instructor, only your accommodations.

To schedule a meeting with the ASO staff, you can send an email to Access@Iona.edu or complete a request for accommodation online by logging on to the Single Sign-On page and going to the ACCOMMODATE app. Once complete, a staff member from the Accessibility Services Office will contact you to schedule a meeting.

Course Calendar and other miscellaneous remarks

You will find the course calendar below. The below schedule is tentative, and subject to change. I will inform the class of any changes in lecture and by posting an announcement on Blackboard.

Date	Content	Assigned Reading
August 28 th	<p>What is Science?</p> <p><i>What, if anything, makes a form of inquiry scientific rather than non-scientific?</i></p>	FIRST DAY: NO READINGS
September 2 nd		LABOR DAY: NO CLASS
September 4 th		Okasha , "Ch. 1 – What is Science?"
September 9 th		Ruse , "Creation science is not science" (5 pages)
September 11 th		Laudan , "Commentary: science at the bar" (3 pages)
September 16 th		Thagard , "Why astrology is a pseudoscience" (3.5 pages)
September 18 th	<p>Challenges to Scientific Reasoning</p> <p><i>"If scientific reasoning is inductive, how can scientists KNOW anything via scientific research?"</i></p> <p><i>"Scientists attempt to unearth the mechanistic or causal underpinnings of phenomena. How do they know when they have the right story?"</i></p> <p><i>"Since a piece of evidence is always compatible with multiple theories, how can scientists be justified in believing any particular theory?"</i></p>	Okasha , "Ch. 2 – Scientific Inference" pp. 16-23
September 23 rd		Okasha , "Ch. 2 – Scientific Inference" pp. 26-30
September 25 th		NO READING
September 30 th		Okasha , "Ch. 2 – Scientific Inference" pp. 23-26
October 2 nd		Okasha , "Ch. 2 – Scientific Inference" pp. 30-35
October 7 th		NO READING
October 9 th	<p>Challenges to Scientific Realism</p> <p><i>"Do scientific theories aim to describe the world as it really is?"</i></p> <p><i>"Since we have no direct evidence for the theoretical posits of scientific theories, should we believe they exist?"</i></p>	Okasha , "Ch. 4 – Realism and anti-realism" pp. 54-58
October 14 th		Okasha , "Ch. 4 – no miracles" pp. 58-62
October 16 th		Hanson , "On Observation"
October 21 st		Okasha , "Ch. 4 – observables/un" pp. 62-66
October 23 rd		Maxwell , "Ontological Status of Theoretical Entities" (1.5 pages)
October 28 th		Van Fraassen , "Constructive Empiricism" (2.5 pages)
October 30 th		Okasha , "Ch. 4 – underdetermination" pp. 66-70

November 4 th	<p align="center">Challenges to Scientific Objectivity</p> <p><i>“Do scientists accept or reject theories in an objective way, independent of any social, cultural or historical context?”</i></p> <p><i>“Should they?”</i></p> <p><i>“Is scientific research and the content of scientific discoveries negatively impacted by gender (and other forms of) bias?”</i></p> <p><i>“If so, in what way?”</i></p>	Okasha , “Ch. 5 – Scientific Change and Scientific Revolutions” pp. 71-78
November 6 th		Kuhn , “Objectivity, Value and Theory Choice” (5 pages)
November 11 th		VETERAN’S DAY: NO CLASS
November 12 th		Longino , “Values and Objectivity” part 1 (5 pages)
November 13 th		Longino , “Values and Objectivity” part 2 (3.5 pages)
November 18 th		De Cruz , “The Value of Epistemic Disagreement...” (5 pages)
November 20 th		De Cruz , “The Value of Epistemic Disagreement...” (2 pages)
November 25 th		TBD
November 27 th		THANKSGIVING
December 2 nd		Okasha , “Ch. 7 – Science and its Critics” pp. 123-130
December 4 th		Okruhlik , “Gender and Biological Sciences” (6 pages)
December 9 th		TBD
FINAL PROJECT DUE ON BLACKBOARD BY 11:59PM ON DECEMBER 13th		

Special Note: Iona is open on Columbus Day, Mon Oct 14 and closed on Veteran's Day, Mon Nov 11.
The last day for Students to submit work in satisfaction of "I" grades from summer sessions is Wed Sep 4;
the last day for grade appeals from the Spring or Summer Sessions is Thur Sep 5.
Last day to withdraw from a fall course with a "W" is Friday, November 15.
Progress reports are due at noon on Friday, October 4.
Final Exam Period is Wednesday Dec 11 to Tuesday Dec 17.